

**USING DIESEL EXHAUST
FLUID WITH THE DURAMAX
6.6L TURBO-DIESEL**

NEW SILVERADO HD



**THE MOST POWERFUL DURAMAX DIESEL EVER
NOW RUNS CLEANER TOO!**



USING DIESEL EXHAUST FLUID

NEW SYSTEM REDUCES TAILPIPE NOx EMISSIONS

The enhanced, legendary Duramax 6.6L Turbo-Diesel is the most powerful Duramax ever built—generating more horsepower and torque than any competitor. This proven powerplant gets the job done while being friendlier to the environment.

The improved Duramax uses the latest emission control technology, reducing Nitrogen Oxide (NOx) emissions by a whopping 63%, when compared to the 2010 model. GM engineers determined the best way to accomplish this remarkable reduction of diesel emissions was to employ a Selective Catalytic Reduction (SCR) system that uses Diesel Exhaust Fluid (DEF).

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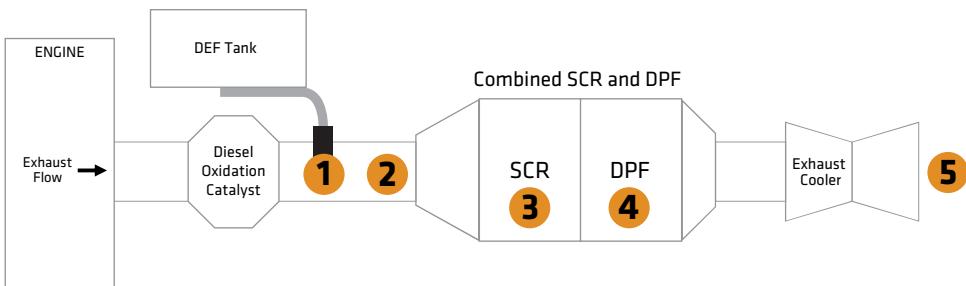


SELECTIVE CATALYTIC REDUCTION (SCR)

The SCR system is an after-treatment system, since it treats the vehicle's exhaust after combustion.

Here's how it works:

- 1 A fine mist of DEF is injected into the exhaust while the engine is running.
- 2 The heat from the exhaust converts the DEF into ammonia.
- 3 When the ammonia, mixed with exhaust gases, reaches the SCR catalyst, the NOx emissions are broken down.
- 4 The Diesel Particulate Filter (DPF) then captures soot to incinerate it during regeneration cycles.
- 5 Water vapor, nitrogen and reduced emissions exit the exhaust system.





USING DIESEL EXHAUST FLUID

DIESEL EXHAUST FLUID (DEF)

Diesel Exhaust Fluid (DEF) is a non-flammable fluid comprised of 33% ammonia-based urea and 67% purified water. DEF is used with diesel engine exhaust systems to reduce the amount of emissions produced by turning Nitrogen Oxide (NOx) into nitrogen and water vapor. DEF technology has a proven track record since it has been used in Europe for years.

Driving Range between DEF Tank Refills

The SCR system uses DEF at a rate of about 1 to 1.25% of the vehicle's diesel fuel usage. A full tank of DEF provides a driving range of about 5,000 miles (8,000 kilometers). Since DEF usage is directly related to fuel consumption, range will vary depending on driving conditions.

Purchasing DEF

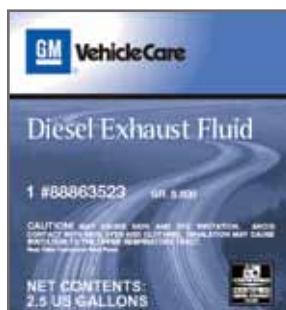
DEF is available at GM dealerships and most major truck stop chains. GM DEF is available in a variety of package sizes to service both individual consumers and fleets, including: 1- and 2.5-gallon jugs, 55-gallon drums and 330-gallon totes. For your convenience, listed below are the GM part numbers for the 1- and 2.5-gallon sizes.

- 1-gallon part number is 88862659
- 2.5-gallon part number is 88863523

If purchasing DEF outside of a dealership, you must use API-certified or ISO 22241 labeled DEF.

If you need assistance locating DEF, the U.S. Department of Energy has a DEF locator on its website that is regularly updated.

You can visit the website at:
afdc.energy.gov/afdc/locator/def/





Refilling Your DEF Tank

DEF is stored in a 5.3-gallon tank located under the passenger side of the cab. The DEF tank fill point is conveniently located under the hood, along with other fluids that require periodic maintenance. It's easily identified with a blue cap.

It is very important not to overfill the DEF tank. The easiest way to verify the tank is not overfilled is to wait until the “Exhaust Fluid Range: 1000 mi” message appears on the DIC. At this point add approximately 3.5 gallons of DEF.

Storing DEF

DEF shelf life is typically at least one year, depending on the storage temperature. It is best stored out of direct sunlight between 12°F and 86°F. Small DEF spills can be cleaned up by absorbing it with dry earth, sand or other non-combustible material and scooping it into a container for disposal.

While DEF is not listed as a hazardous waste by the federal government, please use proper disposal methods. Do not empty into drains; dispose of this material and its container in accordance with all applicable local and national regulations.

USING DIESEL EXHAUST FLUID

ELECTRONIC ONBOARD WARNING SYSTEM

There is no guessing involved when it comes to maintaining a correct DEF level with this system. An electronic onboard warning system provides you with numerous warnings in the Driver Information Center (DIC) to help you maintain adequate DEF levels, alert you if the DEF quality is poor or if there are concerns with the system. See your Duramax owner's manual supplement for a complete description of the electronic onboard warning system and its warning messages.

Maintaining DEF Fluid Levels

The electronic onboard warning system will provide a message alerting the driver when the DEF level is around 1000-miles remaining range.

Additional messages that must be acknowledged alert the driver at the 300-mile, LOW and 0-mile fluid ranges as the DEF tank gradually empties. The fluid level in the DEF tank must be maintained for the vehicle to run correctly. If the DEF tank is allowed to run empty, the system will alert the driver. If fluid is not added at the next vehicle start, the vehicle speed will be limited to 55 mph and ultimately to 4 mph in accordance with federal and state requirements.



Adding DEF to an Empty or Low Tank

Always add at least one gallon (3.78 liters) to release the vehicle from any speed limitation. Adding approximately 3.5 gallons (13.25 liters) of DEF is recommended. Once the system is refilled, the system resets itself and a service visit is not required. It may take up to 30 seconds in park or several miles of driving to update the DEF level warning.



Maintaining DEF Quality

The quality of DEF in the tank must be maintained for the vehicle to run correctly. Care should be taken to prevent any contaminants from getting into the fluid. Only GM-approved DEF, or DEF fluid containing the API certified or ISO 22241 label, should be used.

To meet federal and state requirements, the electronic onboard warning system is designed to automatically monitor DEF quality. If poor-quality fluid is detected, the system will alert the driver. If poor-quality fluid is not replaced within 200 miles, the vehicle speed will be limited to 55 mph at the next vehicle start. If the system's warnings continue to be ignored, vehicle speed will ultimately be limited to 4 mph in accordance with federal and state requirements.



Warranty Concerns

System damage caused by using incorrect fluid is not eligible for warranty reimbursement. Care should be taken to avoid introducing any contaminants into the DEF tank or fluid.

Tampering with the Exhaust System

No modifications should be made to the exhaust system in the area between the engine and the Diesel Particulate Filter (DPF). Modifications to the exhaust routing after the DPF are allowed within guidelines published on gmupfitter.com



FREQUENTLY ASKED QUESTIONS (FAQS)

Q. What is the warranty coverage for the SCR system?

A. The SCR system is covered under the emissions limited warranty just like any other emissions component. However, system damage caused by using incorrect fluid is not eligible for warranty reimbursement. See dealer for details.

Q. Where can you purchase DEF?

A. API-certified DEF is available at GM dealerships and most major truck stop chains. GM DEF is available in a variety of package sizes to service both individual consumers and fleets, including: 1- and 2.5-gallon jugs, 55-gallon drums and 330-gallon totes. For your convenience, listed below are the GM part numbers for the 1- and 2.5-gallon sizes.

- 1-gallon part number is 88862659
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If you need assistance locating DEF, the U.S. Department of Energy has a DEF locator on its website that is regularly updated:

afdc.energy.gov/afdc/locator/def/



Q. Where is the DEF fill point on a vehicle?

A. The DEF fill is conveniently located under the hood, on the passenger side of the engine compartment. The DEF fill location is easily identifiable by its blue cap.

Q. Where is the DEF tank located on the vehicle?

A. The 5.3-gallon DEF tank is located under the cab near the passenger side door.



Q. Do trucks equipped with SCR have a Diesel Particulate Filter (DPF)?

A. Yes they do. The DPF serves a different function than the SCR; it helps remove soot from the exhaust. For 2011, the range between Duramax DPF regeneration cycles has been lengthened by 75% and is now up to 700-miles. This improves fuel economy performance since less diesel fuel is required to clean the DPF. (Based on GM testing.)

Q. Will DEF freeze?

A. Yes, DEF will freeze—at approximately 12°F. If DEF is frozen, the vehicle will start as it always has. After the engine is started, the DEF tank and lines are electrically heated to ensure adequate DEF delivery in cold weather. The DEF thaws with no degradation. Remember, since this system was designed to operate in cold weather, there is no impact on cold-weather engine operation.

Q. Does DEF expand when it freezes and if so, how does it impact the tank?

A. Yes, DEF expands when it freezes. The vehicle's DEF tank and all DEF packaging is designed to accommodate any expansion that may result from being frozen.

Q. Can a freeze-point improver be added to the DEF to keep it from freezing?

A. No, doing so would alter the DEF mixture balance potentially triggering an “EXHAUST FLUID QUALITY POOR” DIC message.

Q. What effect does high-temperature driving have on the vehicle?

A. High ambient temperatures do not affect the operation of the vehicle.

Q. Is DEF flammable?

A. No.



FREQUENTLY ASKED QUESTIONS (FAQS)

Q. Will DEF containers have a date stamp?

A. Yes, each container should be dated.

Q. How do you monitor a truck's DEF level?

A. Very easily. A DIC message will alert the driver whenever a vehicle's DEF level begins to run low (see DEF levels explanation earlier in this brochure).

Q. Is there a DEF level gauge?

A. No. Since the DIC displays DEF level messages, there's no need for a dedicated DEF level gauge.

Q. Is there ever a situation where the truck will not start or drive due to lack of DEF?

A. No. You'll never run into a situation where the truck will not start and drive. However, your speed may be limited (see DEF levels portion of this brochure).

Q. Can you mix fresh DEF with older DEF?

A. Yes, since adding new DEF does not change the mixture ratio you can mix the two together.

Q. What will happen if some other type of liquid is poured into the DEF system?

A. DEF is the only fluid approved and recommended by General Motors. Using a product not recommended by GM will trigger a DIC warning message and may damage the SCR system and void the warranty coverage (see DEF quality portion of this brochure).

Q. Is there a drain plug on the DEF tank?

A. No, there is no drain plug on the DEF tank. However, the tank is designed to be easily removed.



- Q. Is there a way to bypass a system-imposed, low-speed restriction?**
 - A. No. Government regulations mandate the system be tamper proof.

- Q. Will chassis cab upfitters be affected by the location of the DEF tank?**
 - A. Since the tank is located under the cab, it does not impact the installation of any bodies.

- Q. How can I determine if DEF quality is good?**
 - A. If you have no warning messages, the DEF quality in the tank is good. For stored DEF, your GM Dealership has a special tool to check DEF quality.

- Q. How do you clean up DEF spilled on a vehicle?**
 - A. If you spill DEF on the vehicle while filling the tank, wipe the surface with a damp cloth.

- Q. What should you do if DEF makes contact with your skin?**
 - A. Try to avoid prolonged or repeated contact with skin. After handling DEF, always wash your hands thoroughly with soap and water. If irritation occurs, flush exposed area with plenty of water for at least 15 minutes followed by washing area thoroughly with soap and water. If irritation or pain persists, seek medical assistance.

- Q. What should you do if DEF makes contact with your eyes?**
 - A. Flush eyes with large amounts of water for at least 15 minutes. If irritation or pain persists, seek medical assistance.

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Information contained herein is designed to be as comprehensive and factual as possible. General Motors reserves the right, however, to make changes at any time, without notice, in materials, equipment, specifications, models and availability. Since some information may have been updated since the time of printing, please check with your Chevrolet dealer for complete details.

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